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THE IGLOO OF THE INNUIT.¹—IV.

THE interior of an igloo can be best understood by reference to the diagrams. The one, fig. 1, is a vertical section through the entrance; and the other, fig. 2, a ground-plan. Directly opposite the entrance is raised a platform of solid snow, eighteen inches to two feet

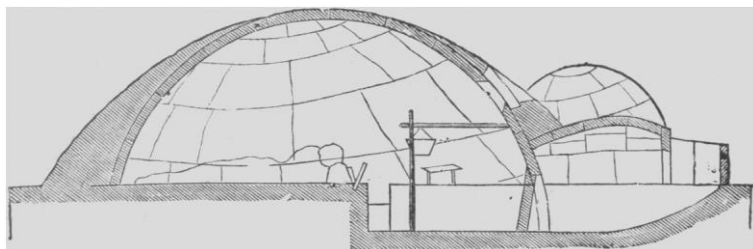


FIG. 1.

in height, which takes up about two-thirds of the floor; and on this are spread the reindeer-skins which make the bed. Sometimes, if the party be large and but one igloo built, there are two of these snow-beds, separated by a narrow aisle running from the entrance; the persons then sleeping at right angles to the positions shown in the illustration. But such large igloos are rare, unless of a permanent or semi-permanent character. On an extension of the platform forward, on the woman's side, is placed the stone lamp; and here the food is cooked, and the native skin clothes are dried. The height of this platform or snow-bed is nearly always above the top of the low door; for the Innuits are instinctively masters of the simple laws of pneumatics, and try to keep the snow-bed as high as possible to reach the upper or warmer strata of air, especially to keep higher than the cold air, which can come in through the open door. The height varies with the permanency of the abode, the temperature, and with the tribe. If very cold, or if intending to occupy the igloo for some time, the beds are made higher than they would be otherwise. The Netschilluks and Kinnepetoo always make much higher beds than the Iwilliks or Igloodiks. There is also much variation in the flatness of the dome; those of the former tribes, especially the Netschilluks, being very flat. This, with their high beds, makes the space between them

very small; but in compensation their igloos are the warmest and most comfortable in the whole arctic region. These Netschilluks (in and around King William's Land) nearly always have to jump out in front of their beds to get standing-room to dress in, although all Innuits are adepts in the art of putting on the most intricate clothing in the smallest space conceivable.

The Kinnepetoo Innuits (around Chesterfield Inlet, especially north of it) use few or no lamps to warm their snow-huts, and, despite the high beds and low roofs, they are cold, cheerless, and uncomfortable beyond measure. These Innuits are essentially reindeer killers

and eaters, and lay in an insignificant stock of seal-oil to burn in their lamps. Walrus-killing is unknown to them. For light they use a piece of rendered reindeer suet, laid beside a piece of lighted moss, all being on a large flat stone. The light of the stone lamp in all igloos where it is used is sufficient for all purposes of sewing and repairing. It is certainly

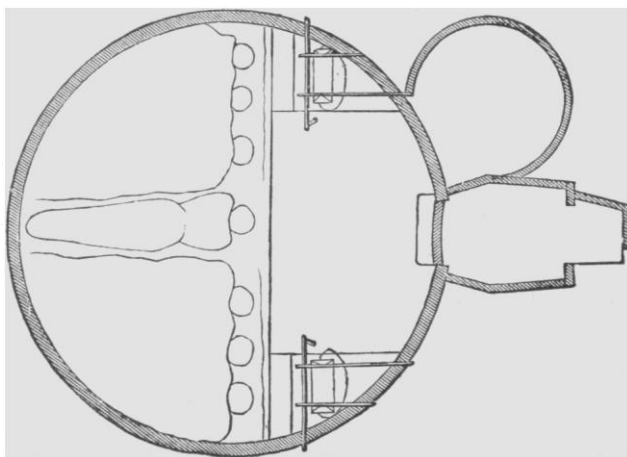


FIG. 2.

equal to the light from three or four kerosene-lamps, and, with the white snow-walls, gives ample illumination.

The Oo-quee-sik Salik Innuits (around the mouth of Back's River), who are salmon-eaters, are another tribe that dispense with warming the snow-houses for want of oil; and this with their very poor stock of clothing, they being

¹ Continued from No. 30.

almost constantly in rags, makes them a most forlorn, uncomfortable-looking, and dejected lot of human beings. The powers of these two tribes to withstand the cold seem almost phenomenal.

The flatness of the domes, however, is not wholly a tribal peculiarity, but is also a function of the season of the year. In the winter-time, when the snow is hard and compact, the roof can be made much flatter than in the spring, when the warm, sunny days bring on a thaw, and threaten to tumble it in. At such times it is made very peaked, to gain strength for its weakest points, the inclining blocks.

The Iwilliks and Iglooliks (among the estuaries of North Hudson's Bay) have ample supplies of whale, seal, and walrus oil, and, despite their higher roofs, have very comfortable houses in the way of warmth, while they exceed all others in roominess, and ease and comfort in dressing and undressing.

The heated air, of course, rises to the top; and, should it grow too warm inside, this heat soon cuts its way through the joints of the top blocks, and enough fresh air enters to quickly reduce the temperature below freezing again, especially if it be very cold on the outside. Sometimes this ascending heat makes so much impression on the edges of the top blocks that they commence to thaw and drip in an annoying manner. This is always remedied by taking a handful or a small block of snow from the floor, where the temperature is very low, and applying it to the dripping spot, where it freezes immediately, and, like a sponge, absorbs the drippings. These little pests have to be watched closely, however: for when they are saturated with water, and thawed from their frozen fastenings, they will come down like a slushy ball of lead; and it seems as if they would defy all the laws of gravity to get down a person's back, or hit a sleeper in the face. I once had a large one fall in a pint cup full of hot reindeer-soup just as I had it near my nose, blowing it to hurry up the meal and get away from a delayed camp.

Small store-igloos are built outside to hold the bulky material, and often connect with the main igloo or its entrance, if their contents are needed from time to time.

Where several families, generally related, build a family igloo, it is done by making a large central one, without bed-platforms or other impediments to roominess; and around this are built the smaller family igloos, — two, three, or even a half-dozen, — connecting with the central one by high groined arches that

will generally allow of passing from one to the other without stooping; and conversation can be readily carried on between them, these smaller igloos being more like radiating alcoves than separate structures. Then the entrance to the main part is made very long (fifteen or twenty feet), and its outer end is changed from time to time to face *away* from the wind, if it be at all strong. The usual entrance is so low that one always has to enter on his hands and knees; but in these family igloos the greater part one can accomplish by stooping considerably. There is always a crowd of hungry dogs ready to take advantage of a person's entering to crowd in close behind, so as to steal a stray piece of blubber from the lamp-platform or floor. At all other times two or three of their heads can be seen closing the entrance, waiting a good opportunity for a dash. The matron of the house, sitting *à la Turc* on the edge of the bed, keeps a good stout club convenient, and whacks them over the nose whenever they make an unusually impudent intrusion. At night-times, and during cold, windy weather, the more belligerent of these camels of the cold monopolize the entrance for sleeping-apartments; but they generally manage to get into some sort of fight, breaking in the door, and the master then arises and vacates these canine compartments with the butt-end of a whip or a sledge-slat, and they remain quiet for the rest of the night.

The temperature inside ranges from freezing (above which, of course, it cannot ascend) to about ten to twenty degrees below. Late in the winter, when all have inured themselves to the cold, the same tribe will keep their houses much colder with the same apparent comfort. At these temperatures one feels very warm after coming in from the outside. The outer clothes are taken off, and even baths are indulged in; the little children, *stark naked*, playing on the reindeer-skins of the bed with the little puppies and toy harness. Those tribes that do not use oil-lamps are, of course, much colder in their houses, having only the warmth of the body and a few lights, with occasionally some cooking from the lamps; yet I do not think it ever gets below zero. Even in these igloos I have known a Kinnepetoo to take a reindeer-skin that had been soaked to rid it of hair, and that was apparently frozen as solid as boiler plate iron, and, putting it under his coat against the bare skin, hold it there not only until it was thawed out, but also until it was dry, and fit to be used for a drumhead for their superstitious rites. Juggernaut could show no greater devotees among

his followers. Such are the iron Innuits of the unwarmed igloos of the Arctic.

A recently constructed igloo is more comfortable than one long used, the alternating heat and cold of the day and night soon converting the latter into a translucent mass of ice, that becomes uncomfortably chilly on a cold night; besides, the steam from the cooking and the moisture from the breath congeal upon the roof, and, in the course of ten or twelve days, become so thick as to form a base for a constant liliputian snow-storm, which is disagreeable beyond measure. One of the most conspicuous comforts of arctic travelling is the constant changing of igloos.

(To be continued.)

BALFOUR'S LAST RESEARCHES ON PERIPATUS.

At the time of his death, the late lamented Prof. F. M. Balfour was engaged upon an investigation of the anatomy and development of *Peripatus*, the lowest known form of Tracheata (insects). Unfortunately, he left his work far from complete; but two friends, Mr. Sedgwick and Professor Moseley, both thoroughly competent, have undertaken and completed the grateful task of editing what could be gathered from Balfour's material. We have, however, hardly more than a descriptive account of the anatomy and development of the animal. We miss the fruitful thought with which Balfour enriched his writings before committing them to the press.

The article is published in the April number of the *Quarterly journal of microscopical science*, and is accompanied by numerous beautiful plates. A portion of these were drawn by Miss Balfour. Their excellence graces this quiet expression of a sister's close relation to a gifted brother.

Balfour's investigations were directed especially upon *Peripatus capensis*. The memoir opens with a careful description of the external characters of the species. The account of the legs is the first satisfactory one published. The number of legs is variable, but usually there are seventeen pairs. Each leg has the form of a cone, with a pair of claws at the apex: it bears a succession of rings of papillae, but towards the tip the papillae in part fuse together to form three ventrally placed pads. The foot is distinct, being separated by a constriction from the upper part of the limb, and has several pads upon its ventral surface, and bears the two conical recurved claws. On the middle of the ventral line of junction of the leg with the body lies the opening of the segmental organs. The disposition of this opening on the fourth and fifth legs is slightly different. The last leg has a papilla with a slit-like gland opening at its apex. The gland itself is large, and runs far forward, and is probably a modified crural gland.

Part II. is a monograph of the internal anatomy. In the *alimentary canal*, a nearly straight tube slightly

longer than the body, five parts may be distinguished. 1. The buccal cavity. Its opening is surrounded by a tumid lip, covered by a soft skin raised into papilliform ridges. Attached to the median dorsal wall of the cavity is a muscular protuberance (tongue), covered by the oral epithelium, and furnished with organs of special sense, like those in the skin, and with chitinous teeth. On each side of the tongue is placed the jaw, with recurved chitinous teeth. The jaws are, no doubt, modified limbs: their structure and action are minutely described. The salivary glands open into the buccal cavity by a short common duct, are variable in length, but stretch usually two-thirds the length of the body. They consist of two parts: the first runs backward as a wide, straight tube; the second runs forward and upward, is small in diameter, and apparently branching in the figures, though the fact is not mentioned in the text. The anterior end of the first part serves as a duct, and is lined by a cubical-celled epithelium; while the rest of the same part is



FIG. 1. Horizontal section through the head: *tr p*, tracheal pit; *sal*, salivary gland; *M*, mouth; *s d*, common salivary duct; *J*, jaw; *o j*, outer jaw, or muscular portion; between the two jaws lies the section of the tongue.

glandular, and lined by very elongated epithelial cells with their nuclei at their bases. 2. The pharynx is a highly muscular tube, with a triangular lumen, which extends from the mouth to about half way between the first and second pair of legs. (It appears to me that the author is in error when he states that such a structure is not characteristic of insects.) 3. The oesophagus, on the dorsal wall of which occurs the junction of the two sympathetic nerves. 4. The stomach, by far the largest part of the alimentary tract, has its walls irregularly, not segmentally, folded. The walls themselves are composed principally by the internal epithelium, the cells of which are elongated, fibre-like, with their nuclei about one-fourth of the way from the base; and around their bases are short cells irregularly scattered, and having round nuclei. 5. The short rectum is chiefly remarkable because the circular muscular layer is *outside* the internal layer formed of isolated longitudinal bands.

The *nervous system* is particularly interesting; for it consists of two ventral cords united by numerous transverse bands, and having an enlargement corre-